

Russian Olive

Russian Olive is a woody shrub or small tree growing 10 to 25 feet tall that invades seasonally wet habitats, forming dense stands that may crowd out native plants.



Russian olive is native to Europe and western Asia. It was introduced to the United States in the early 1900s and became widely distributed due to its extensive use as an ornamental species in drier regions of the Great Plains and Rocky Mountains. In Montana, Russian olive has been used in shelterbelts, windbreaks, wildlife habitat, ornamentals, and wildlife habitat plantings. Russian olive has escaped cultivation and become invasive. Plants thrive and spread along riparian corridors, irrigation systems, pastures, saline affected areas, and some wetland sites. It is a Montana-listed Priority 3 species, meaning it is NOT a noxious weed but is a regulated plant where the intentional spread or sale is prohibited.

Species Name: *Elaeagnus angustifolia* L.
Family: Elaeagnaceae

Identification: Russian olive is a large, thorny, perennial deciduous shrub or small tree usually growing 10 to 25 feet tall. The leaves are 1 to 4 inches long and 0.5 to 1.5 inches wide with smooth edges and are arranged alternately on the stem (Figure 1). The upper leaf surface is green-gray and lower surface silver-gray. New stem growth is covered with hairs giving it a silvery-gray appearance. Stems become smooth and reddish brown with age and mature trunk bark can be gray and ridged (Figure 2). The numerous thorns are 1 to 2 inches long and arranged alternatively on stems. The flowers have four yellow sepals that resemble petals, are bell-shaped, and arranged in clusters. It has clusters of 0.5 inch, hard, olive-shaped fruit that each contain one seed. Immature fruits are silver and ripen to tan or brown.

Not to be Confused with: Only one species of the *Elaeagnus* genus, silverberry (*E. commutata*), is native to Montana and primarily grows east of the Rocky Mountains. Silverberry is a shorter (up to 6 feet tall) root-sprouting shrub with dark young stems compared to the silvery new growth of Russian olive. Silver buffaloberry (*Shepherdia argentea*) is a closely related native shrub important in conservation practices. Silver buffaloberry leaves and buds have an opposite arrangement whereas Russian olive leaves have alternate leaf and bud arrangement. Silver buffaloberry has smaller, red-orange berries and forms short thickets about 10 feet tall. Silver buffaloberry also is frequently found occupying the same wet saline sites invaded by Russian olive. Caution should be exercised when attempting to selectively control Russian olive in mixed woody plant stands to avoid non-target losses.

Habitat: Russian olive thrives under a wide range of moisture and soil conditions. It prefers areas where the water table is near the soil surface such as in riparian areas, flood plains, valley bottoms, irrigation ditches, springs, and sub-irrigated pastures and grasslands (Figure 3). It also grows well in uplands that receive as little as 8 inches of annual precipitation such as along roads, railways, and fence lines. It grows in sandy, silty or loamy soils with low fertility and low to moderate soluble salt concentrations and is described as tolerant to very tolerant of salt injury. It occurs from sea level to about 8,000 feet of elevation and is shade tolerant.



Figure 1. Leaves are long and narrow, and bell-shaped flowers have four yellow sepals. Photo by T. Sydnor, Ohio State University, Bugwood.org.



Figure 2. New stems and leaves are covered with silvery-gray hairs; older stems are smooth and reddish brown; immature fruits are silver. Photo by J. Samanek, Phytosanitary Admin., Bugwood.org.



Figure 3. Russian olive infestation along a waterway. Photo by J.S. Peterson, USDA NRCS National Plant Data Center, plants.usda.gov.

Spread: Seed spread accounts for most new plants. Birds and other animals such as coyotes, deer, racoons, and small mammals consume the fruit and excrete seed in new areas. Fruit floats and is easily dispersed along waterways. Viable seed can persist in the soil for many years. Russian olive also spreads by vegetative sprouts, stem cuttings, and root pieces.

Impacts: Until the 1970s, Russian olive was one of a few commercially available medium-height trees used for dryland windbreaks and shelterbelts because of its ease of establishment and value for wildlife. More recently, the availability of tree species for dryland conservation practices has improved. Unfortunately, Russian olive escaped cultivation by the 1950s, has become widespread and threatens plant communities in riparian areas, grasslands, irrigated pastures, and hayland. Russian olive can become the dominant species forming dense, monotypic stands that can prevent the establishment and regeneration of desired vegetation like cottonwood and willows. It grows relatively quickly and develops a dense canopy which crowds out vegetation or prevents shade-intolerant vegetation from establishing, thereby reducing species diversity and plant productivity. Its growth on streambanks can also alter the natural flooding regime of a waterway and reduce availability of nutrients and moisture.

Management: Preventing establishment is the most effective and least expensive control tactic. In Montana, it is unlawful to plant Russian olive as a landscape or ornamental tree. Detecting new infestations early and acting quickly to eradicate or contain an infestation is advised. Targeting control on low-density sites will help limit future seed production, is less costly on a per-acre basis, and the understory is more likely to return to desired species than higher-density sites.

Mechanical control options include pulling, mowing, cutting, and girdling. Seedlings can be controlled by hand-pulling or frequent mowing until stems get larger than one inch in diameter. Russian olive can be cut with chainsaws, axes, shears, etc. Cutting as close to the ground as possible will eliminate top growth for a short period but sprouts will develop from the base of the stumps. Girdling interrupts the transport of photosynthates to the root system which effectively starves the whole plant. Girdling is the complete removal of a horizontal 2- to 5-inch strip of bark from the entire circumference of the trunk.

Herbicides can provide effective control as foliar and basal-bark applications, and when combined with mechanical treatments. Foliar applications are made to fully developed

leaves. Thoroughly wet (without allowing dripping) green leaves and shoots, especially near the top of the plant. It is advised to conduct foliar spraying in the late fall to reduce the chances of injury to desirable vegetation; however, more than one foliar application may be needed each year. Basal bark applications are applied directly to the entire circumference of the lower two feet of an uncut trunk at any time of the year and are most effective on stems less than 5 inches in diameter. In addition, cut stumps and girdling combined with herbicide treatments will improve control, limit sprouting, and can be applied at any time of the year except freezing conditions. Thoroughly wet the cut surface or girdle wound with herbicide immediately after cutting. Use individual plant herbicide treatments (i.e., spot spraying foliage, basal bark applications, cut stump, girdling) for light infestations, areas with difficult access, or areas with desirable vegetation. Use broadcast foliar applications for dense infestations and when desired vegetation is absent. Effective herbicides for Russian olive control contain the active ingredients triclopyr (Garlon 3A, Garlon 4), 2,4-D + triclopyr (Crossbow), imazapyr (Arsenal, Habitat), or glyphosate (Roundup). Consult the label on the need to add a nonionic surfactant.

Trained goats will selectively graze Russian olive seedlings and young trees, and burning will modestly control saplings and can reduce top growth. Prescribed fire or grazing will not eliminate Russian olive but can be considered for suppression. Integration with herbicides can increase effectiveness of control. There are currently no classical biological control options.

Regardless of management strategies used, sites should be monitored for at least two years following treatment to manage new seedlings and herbaceous weeds, and to make sure desired competitive vegetation is establishing.

Additional Resources:

USDA Natural Resources Conservation Service. Find your local service center at www.farmers.gov/service-locator.

Plants Database: *Elaeagnus angustifolia* L. Russian Olive
<https://plants.usda.gov/>

USDA NRCS Montana Invasive Plant Species Publications
<https://www.nrcs.usda.gov/wps/portal/nrcs/mt/technical/ecoscience/invasive/>

USFS. 2014. Field Guide for Managing Russian Olive in the Southwest. USFS, Southwest Region, TP-R3-16-24. 16 pages.

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